



U.S. Department of Energy  
**Office of River Protection**

P.O. Box 450  
 Richland, Washington 99352

00-OSD-177

DEC 28 2000

Mr. Douglas R. Sherwood  
 Hanford Project Manager  
 U.S. Environmental Protection Agency  
 712 Swift Blvd., Suite Five  
 Richland, Washington 99352

**RECEIVED**  
 JAN 17 2001  
**EDMC**

Mr. Michael A. Wilson, Program Manager  
 Nuclear Waste Program  
 State of Washington  
 Department of Ecology  
 P.O. Box 47600  
 Olympia, Washington 98504

Addressees:

**APPROVAL OF DOUBLE-SHELL TANKS (DSTS) FOR ULTRASONIC EXAMINATION IN  
 FISCAL YEAR (FY) 2001**

Reference: ORP letter from C. E. Clark to M. A. Wilson, Ecology, "Transmittal of Reports Requested Under Administrative Orders No. 00NWPKW-1250 and No. 00NWPKW-1251, Dated June 13, 2000," 00-OSD-108, dated September 18, 2000.

Action Item 1.C. of Administrative Orders No. 00NWPKW-1250 and No. 00NWPKW-1251 requires "Selection of the tanks to be examined may utilize either the tank selection criteria established in the document description of the Double-Shell Tank Selection Criteria for Inspection (WHC-SD-WM-ER-529), or as recommended to Ecology by written request from the U.S. Department of Energy, describing the rationale for tank selection, and as approved by Ecology."

We request the State of Washington Department of Ecology's formal concurrence with selection of Tanks 241-AN-102, 241-AW-101, 241-AW-105, and 241-AY-101, in accordance with the Administrative Orders cited above. The ultrasonic testing reports for the two DSTs examined in FY 2000, included as Attachment 3 to the Reference, identify the four DSTs selected for examination in FY 2001, the rationale for their selection, and the scope of examination for each tank. For convenience, the selection rationale is attached to this letter. Following discussions on this subject on August 14, 2000, Mr. Robert Wilson of your staff informally concurred with the tank selection.

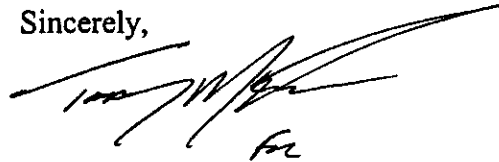
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If you have any questions, please contact me, or your staff may contact Russell G. Harwood,  
ORP Operations Program Division, (509) 376-2348.

Sincerely,



Clifford E. Clark, Acting Program Manager  
Office of Regulatory Liaison

OSD:RGH

Attachment

cc: W. Burke, CTUIR  
P. Sobotta, NPT  
R. Jim, YN  
M. P. DeLozier, CHG  
M. J. Riess, CHG  
R. F. Stanley, Ecology  
J. S. Hertz, FHI  
M. B. Reeves, HAB  
M. L. Blazek, Oregon Energy  
C. E. Clark, RL  
K. A. Klein, RL  
H. R. Rodriguez, RL  
Administrative Record ✓

- No reportable wall thinning was detected. Furthermore, no detectable corrosion was observed at the 411 in. and 13.8 in. waste level interface and the 6 in. level interface is below the inspectable height (midway through knuckle radius).
- The rough outside tank surface (weld spatter) reduced the quality of the inspection data at the interface of the weld inspections. Wire brushing or otherwise cleaning the surface would improve the performance of the ultrasonic system.

## 12.0 DOUBLE-SHELL TANK SELECTION CRITERIA AND UT SCHEDULE FY 2001

Item 1.C. of Administrative Orders 00NWPKW-1250 and 00NWPKW-1251 (Silver 2000) require that this report include a schedule identifying each of four more DSTs, not previously examined by ultrasonic testing, that will be examined during FY 2001.

Tanks selected by CH2M Hill Hanford Group, Inc. for ultrasonic examination in FY 2001, and the scope of planned examinations, are indicated in Table 14.

Table 14. Ultrasonic Inspection Scope of DSTs in FY 2001

DST	Primary tank, vertical strip	Primary tank, horiz. (20 ft.) and vert. (20 ft.) welds <sup>b</sup>	Liquid/Air interface region <sup>c</sup>	Primary tank knuckle <sup>d</sup>	Primary tank bottom
241-AW-101	X	X	X	X	
241-AW-105	X	X		X	
241-AN-102	X	X		X	X
241-AY-101	X	X		X	X

Tank 241-AY-101 is selected because it was originally scheduled to be included in the first

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- b) Welds and adjacent heat affected zones are to be examined for cracks. The horizontal weld to be examined is the circumferential weld joining the transition wall plate with the lower knuckle. The vertical welds to be examined are the welds joining the two lowest shell course plates, or 20 feet, whichever is greater. However, the length of vertical weld to be examined shall be extended, if necessary, to include at least 12 inches of the nominally thinnest wall plate.
- c) Twenty (20) foot long by 12 inch wide horizontal scan centered on the estimated location of the liquid/air interface that existed for a minimum of five years in the designated DST
- d) This includes only the portion of the lower knuckle that can be examined with current ultrasonic testing equipment, i.e., approximately the upper 3 inches of the lower knuckle. Approaches for examining the most highly-stressed region of the lower knuckle are being evaluated, but will not be available for deployment in FY 2001.

six DSTs examined. However, examination was prevented due to corrosion product buildup on the exterior of the primary tank wall, as indicated in Table 3, note 4 of the integrity assessment report for AY tank farm (Jensen 1999b). A wall cleaning tool has been developed and demonstrated to prepare a vertical strip on the tank wall for ultrasonic examination. The wall cleaning tool is limited to movement along a vertical path on the tank wall aligned with the 24 inch riser through which it is deployed, and cannot traverse the tank horizontally. Consequently the welds and adjacent heat affected zones that can be examined in this tank may be limited to those that fall within the path of the wall cleaning tool, or are in areas that are otherwise relatively uncorroded. Tank 241-AN-102 was selected because it is designated as the first feed tank for low-activity waste processing, and will subsequently be used as a staging tank for waste feed delivery. An engineering study documenting the basis for selection of 241-AN-102 as a staging tank identified some programmatic risk associated with corrosion potential in this tank, and recommended early ultrasonic examination of the tank as a means of managing that risk (Blacker and Tulb rg 2000). Tanks AW-101 and AW-105 were selected based on assessment of minimum interference with other planned activities in tank farms during FY01, and also rank in the top half of the prioritized order of examination of remaining double-shell tanks, as of the end of FY 2000 (Jensen 2000). Tanks 241-AN-101, 241-AW-102, 241-AW-104, and 241-AW-105 were selected by CH2M Hill Hanford Group as backup tanks in the event one or more of the tanks listed in Table 14 could not be examined due to interference with other activities, tank conditions, or other reasons. The reason for selection of these tanks is to minimize tank farm to tank farm relocation of ultrasonic testing equipment, if tank substitutions are necessary.

### 13.0 DOUBLE-SHELL TANK SELECTION CRITERIA AND UT SCHEDULE FY 2001

Item 1.C. of Administrative Orders 00NWPKW-1250 and 00NWPKW-1251 (Silver 2000) require that this report include a schedule identifying each of four more DSTs, not previously examined by ultrasonic testing, that will be examined during FY 2001.

Tanks selected by CH2M Hill Hanford Group, Inc. for ultrasonic examination in FY 2001, and the scope of planned examinations, are indicated in Table 25.

Table 25. Ultrasonic Inspection Scope of DSTs in FY 2001

DST	Primary tank, vertical strip	Primary tank, horiz. (20 ft.) and vert. (20 ft.) welds <sup>b</sup>	Liquid/Air interface region <sup>c</sup>	Primary tank knuckle <sup>d</sup>	Primary tank bottom
241-AW-101	X	X	X	X	
241-AW-105	X	X		X	
241-AN-102	X	X		X	X
241-AY-101	X	X		X	X

Tank 241-AY-101 was selected because it was originally scheduled to be included in the first six DSTs examined. However, examination was prevented due to corrosion product buildup on the exterior of the primary tank wall, as indicated in Table 3, note 4 of the integrity assessment report for AY tank farm (Jensen 1999c). A wall cleaning tool has been developed and demonstrated to prepare a vertical strip on the tank wall for ultrasonic examination. The wall-cleaning tool is limited to movement along a vertical path on the tank wall aligned with the 24 inch riser through which it is deployed, and cannot traverse the tank horizontally. Consequently the welds and adjacent heat affected zones that can be examined in this tank may be limited to those that fall within the path of the wall cleaning tool, or are in areas that are otherwise relatively uncorroded. Tank 241-AN-102 was selected because it is designated as the first feed tank for low-activity waste processing, and will subsequently be used as a staging tank for waste feed delivery. An engineering study documenting the basis for selection of 241-AN-102 as a staging tank identified some

<sup>b</sup> Welds and adjacent heat affected zones are to be examined for cracks. The horizontal weld to be examined is the circumferential weld joining the transition wall plate with the lower knuckle. The vertical welds to be examined are the welds joining the two lowest shell course plates, or 20 feet, whichever is greater. However, the length of vertical weld to be examined shall be extended, if necessary, to include at least 12 inches of the nominally thinnest wall plate.

<sup>c</sup> Twenty (20) foot long by 12 inch wide horizontal scan centered on the estimated location of the liquid/air interface that existed for a minimum of five years in the designated DST.

<sup>d</sup> This includes only the portion of the lower knuckle that can be examined with current ultrasonic testing equipment, i.e., approximately the upper 3 inches of the lower knuckle. Approaches for examining the most highly-stressed region of the lower knuckle are being evaluated, but will not be available for deployment in FY 2001.

programmatic risk associated with corrosion potential in this tank, and recommended early ultrasonic examination of the tank as a means of managing that risk (Blacker and Tulberg 2000). Tanks AW-101 and AW-105 were selected based on assessment of minimum interference with other planned activities in tank farms during FY01, and also rank in the top half of the prioritized order of examination of remaining double-shell tanks (Jensen 2000). Tanks 241-AN-101, 241-AW-102, 241-AW-104, and 241-AZ-102 were selected by CHG as backup tanks in the event one or more of the tanks listed in Table 25 could not be examined due to interference with other activities, tank conditions, or other reasons. The reason for selection of these tanks is to minimize tank farm to tank farm relocation of ultrasonic testing equipment, if tank substitutions are necessary.